Patent Claims

1. A linear rolling bearing for transmitting torques about its longitudinal axis, having an inner profile element (2) and an outer profile element (1) which surrounds the inner profile element (2) at least partially, the two profile elements (1, 2) being mounted via rolling bodies (3) such that they can be displaced with respect to one another in the longitudinal direction, which rolling bodies (3) circulate endlessly in at least one first circulatory channel (5) and in at least one second circulatory channel (6), the circulatory channel (5, 6) having a loadbearing channel (7, 10) which is parallel to the longitudinal axis, a return channel (8, 11) which is parallel to the longitudinal axis, and two deflection channels (9, 12) which connect the loadbearing channel (7, 10) and the return channel (8, 11) to one another in an endless manner, the rolling bodies (3) which are arranged in the loadbearing channel (7) of the first circulatory channel (5) being provided for transmitting a torque between the two profile elements (1, 2), and the rolling bodies (3) which are arranged in the loadbearing channel (10) of the second circulatory channel (6) being provided to transmit a torque in the opposite direction between the two profile elements (1, 2), characterized in that the first circulatory channel (5) and the second circulatory channel (6) can be connected to one another for jointly transmitting torques, the return channel (8, 11) of the circulatory channel (5, 6) which can be respectively connected being used as a loadbearing

channel and the loadbearing channel (7, 10) of the circulatory channel (5, 6) which can be respectively connected being used as a return channel.

2. The linear rolling bearing as claimed in the features of the precharacterizing clause of claim 1, in which substantially only the loadbearing channel (7, 10) of the first or second circulatory channel (5, 6) is provided below a critical torque for transmitting the torque, the return channel (8, 11) of the respective other circulatory channel (5, 6) being provided additionally above the critical torque as a loadbearing channel for transmitting this torque, and the loadbearing channel (7, 10) of said other circulatory channel (5, 6) being provided as a return channel.

3. The linear rolling bearing as claimed in claim 1 or 2, in which a rotational angle of the two profile elements (1, 2) with respect to one another about the longitudinal axis is a function of the prevailing torque, a critical rotational angle being exceeded above the critical torque, at which critical rotational angle the return channel (8, 11) is used as a loadbearing channel and the loadbearing channel (7, 10) is used as a return channel in the circulatory channel (5, 6) which is connected.

4. The linear rolling bearing as claimed in claim 1, in which the loadbearing channel (7, 10) and the return channel (8, 11) are delimited in each case by an outer raceway (17, 18, 21, 22) for the

rolling bodies (3), which outer raceway (17, 18, 21, 22) is assigned to the outer profile element (1), and by an inner raceway (33, 34) for the rolling bodies (3), which inner raceway (33, 34) is assigned to the inner profile element (2).

5. The linear rolling bearing as claimed in claim 1, in which the deflection channel (9, 12) is delimited by an outer deflection track (29, 30) which is assigned to the outer profile element (1) and by an inner deflection track (35) which is assigned to the inner profile element (2).

6. The linear rolling bearing as claimed in claim 4, in which the rolling bodies (3) are arranged in the return channel (8, 11) with play S with respect to the raceways (17, 21, 33, 34) which delimit the return channel (8, 11).

7. The linear rolling bearing as claimed in claim 4, in which the rolling bodies (3) are arranged without play in the loadbearing channel (7, 10), in roller contact with the raceways (18, 22, 33, 34) which delimit the loadbearing channel (7, 10).

8. The linear rolling bearing as claimed in claim 6, in which the play of the rolling bodies in the return channel (8, 11) of the circulatory channel (5, 6) which can be connected is reduced during a rotation of the two profile elements (1, 2) with respect to one another.

9. The linear rolling bearing as claimed in claim 7, in which the play of the rolling bodies (3), with

respect to the raceways (33, 34, 18, 22), in the loadbearing channel (7, 10) of the circulatory channel (5, 6) which can be connected increases during a rotation of the two profile elements (1, 2) with respect to one another.

10. The linear rolling bearing as claimed in claim 1, in which the outer profile element (1) has a hollow body (13) and the inner profile element (2) has a shaft (31), a plurality of segments (15, 16) which are distributed over the circumference and delimit the circulatory channels (4, 5) together with the shaft (31) being provided between the hollow body (13) and the shaft (31).

11. The linear rolling bearing as claimed in claim 10, in which every segment (15, 16) is provided with the two outer raceways (17, 18) which are arranged parallel to one another, and with two deflection tracks (29, 30) which connect said raceways (17, 18) to one another.

12. The linear rolling bearing as claimed in claim 10, in which the segment (15, 16) is supported on the hollow body (13) in order to transmit a torque.

13. The linear rolling bearing as claimed in claim 11, in which the outer raceway (17, 18) is configured as a ball groove (19, 20, 23, 24) on that side of the segment (15, 16) which faces the shaft (31), a convex shaped-out molding (26, 27) of the segment (15, 16) being formed on its side which faces the hollow body (13).

14. The linear rolling bearing as claimed in claim 13, in which the shaped-out molding (26, 27) of the segment (15, 16) bears against a rest of the hollow body (13) in order to transmit a torque.

15. The linear rolling bearing as claimed in claim 14, in which the hollow body (13) is provided with a plurality of shaped recesses (28) which are distributed over the circumference, project radially inwardly and form rests for the segments (15, 16) in order to transmit a torque.

16. The linear rolling bearing as claimed in claim 10, in which the shaft (31) has a plurality of teeth (32) which are distributed over the circumference, are arranged parallel to the longitudinal axis and on which the raceways (33, 34) are formed.

17. The linear rolling bearing as claimed in claim 16, in which teeth (32) which are adjacent to one another delimit in each case a convexly curved circumferential section (35) of the shaft (31) between them.

18. The linear rolling bearing as claimed in claim 17, in which the circumferential section (35) delimits the deflection channel (5, 6), as deflection track for the rolling bodies (3).

19. The linear rolling bearing as claimed in claim 10, in which the hollow body (13) can be deformed resiliently.